

5.5 On-Airport Passenger Movements

The preferred terminal concept includes improvements to the Terminal Core and East Terminal Areas as well as development of the West Terminal Complex. The West Terminal Complex will act as a unit terminal with the full array of landside support facilities including terminal roadways, curbs, public parking, rental car facilities, and commercial vehicle holding areas. Various concepts were evaluated for providing on-Airport connections for passengers between the existing Terminal Core/East Terminal Area on the east side of the Airport and the future West Terminal Complex. These concepts considered the accommodation of passenger movements between secure areas of the east and west sides of the Airport and the accommodation of passenger movements between non-secure areas of the east and west sides of the Airport.

Early in the planning process, it was determined that secure passenger movements would be provided by a secure automated people mover (APM) system. No other concepts for the movement of secure passengers were considered. The secure APM concept is discussed in Section 5.5.1.

The Master Plan explored several options for the transportation of non-secure passengers between the east and west sides of the Airport, including the extension of the existing non-secure ATS system, a cross-airfield roadway, and shuttle buses using public roads around the Airport. The preferred concept for transporting non-secure passengers between the East and West Terminals is the shuttle bus operation using public roads around the Airport, as discussed in Section 5.5.2.3.

5.5.1 Secure East/West Passenger Movements – Secure APM Concept

It was determined early in the planning process that, at a minimum, a secure APM system connecting the Terminal Core/East Terminal Areas and West Terminal Complex would be required regardless of which airlines ultimately reside in the West Terminal Complex. The principal reason for this determination is that under all development phases, connecting traffic is envisioned to occur between the West Terminal Complex and the rest of the terminals at the Airport. Furthermore, it was assumed that passenger check-in, ticketing, and bag claim may occur at a terminal remote from the gates being used (e.g., an airline with a hubbing operation at Terminal 3 may use gates or code share with a partner assigned to gates at the new West Terminal Complex and secure access between the terminals would be required). Note that the potential for alternative short-term transportation of secure passengers may be possible. Future design efforts will include the refinement of these options.

A second factor supporting the development of a secure APM system involved the expected phasing of the West Terminal Complex development. It is assumed that the mid-field concourse would be developed in advance of the West Terminal and that the mid-field concourse would be served exclusively by the existing Terminal Core landside facilities during the period preceding the opening of the West Terminal. Once the West Terminal Complex is complete, the secure APM system would be extended to provide connectivity between the secure areas of the Terminal Core/East Terminal Areas and the West Terminal Complex.

The secure APM system alternatives analysis explored options to support several terminal configurations assessed in the terminal alternatives analysis. These alternatives are documented in the *O'Hare Modernization Program Secure and Non-Secure Automated People Mover Alternatives*

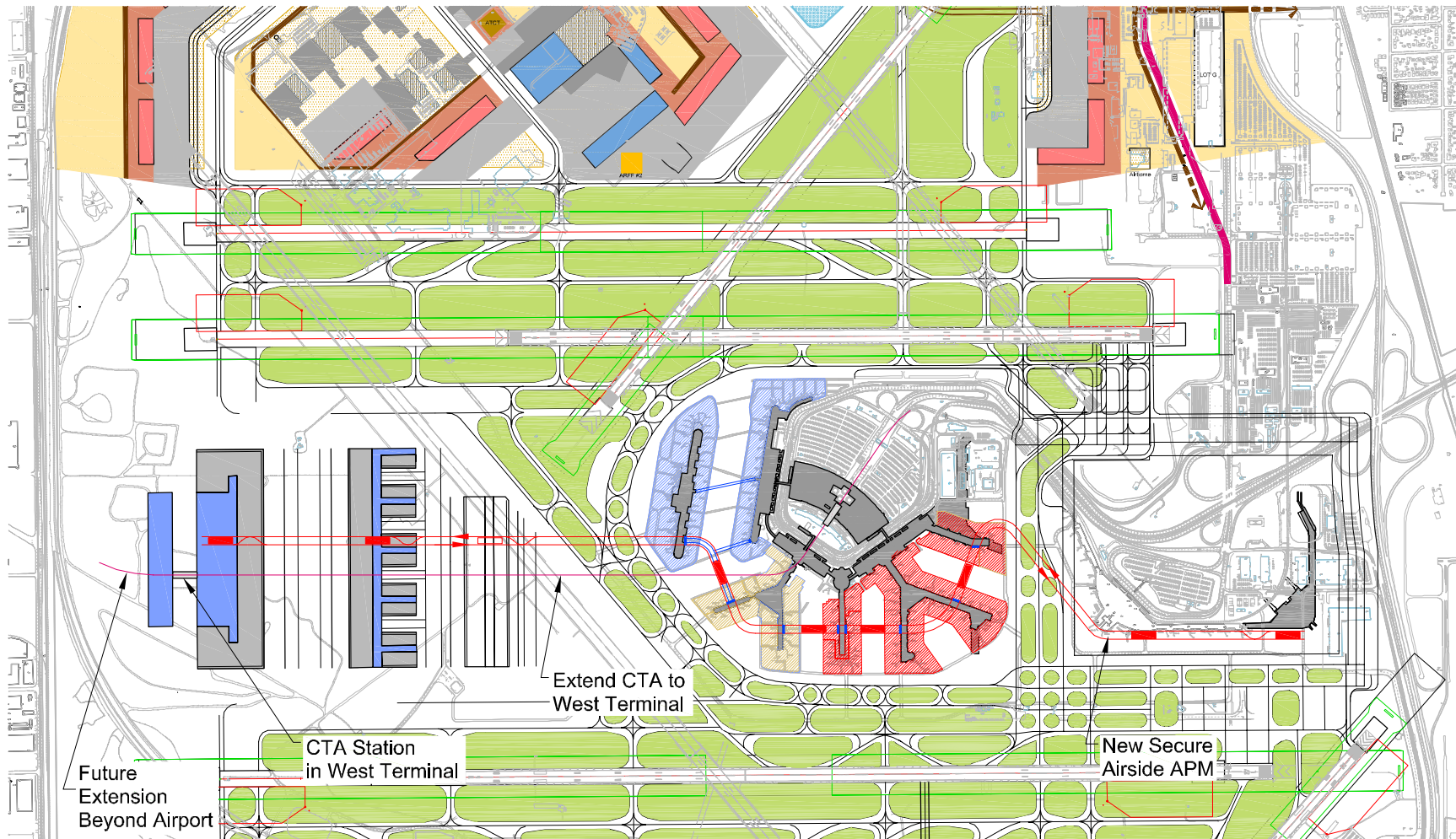
report.¹¹ Alternatives considering increased redundancy and failure management were evaluated to accommodate concepts with more gates in the West Terminal Area than that ultimately provided in the selected preferred terminal concept. As these concepts were not consistent with the preferred terminal concept, they are not discussed here.

APM alignments developed to support the preferred terminal concept include:

- *Concept 1*, shown in **Exhibit V-114**, connects the West Terminal Complex to all terminals on the east side of the Airport. APM stations are provided between concourses at Terminals 1, 2, 3, and the WGP's Terminal 4. Stations are also provided at Terminal 5 and the WGP's Terminal 6. The primary advantage of this design involves providing stations between concourses thereby reducing the total number of stations (and presumably costs) required to serve all of the terminals at the Airport and, in some instances, allows for improved vertical circulation between station platforms and terminal concourses. As shown in Exhibit V-114, there would be a total of eight stations required to serve all of the terminals at the Airport. This compares to nine stations that would be required if each of the terminals were to be served by its own APM station. This concept incorporates a pinched-loop design that can be phased in over time depending on demand and airline needs.
- *Concept 2*, shown in **Exhibit V-115**, represents a slight of Concept 1 in that the system is routed to the north side on Concourse C, provides a station connection at the pedestrian tunnel connecting Concourses B and C, and then provides another station at Concourse E/Terminal 2. The primary disadvantages of this alternative APM system concept are the additional distances of tunnel and system guideway necessary (approximately 2,200 feet, which represents an increase in guideway of approximately 30 percent compared to the preferred alternative assuming no extension of the system past Terminal 2) to route the system to the north of Concourse C, the one additional station necessary to serve Concourses B and C separate from Concourse E, and the depth of the station that would be located below the pedestrian tunnel for Concourse B and C.
- *Concept 3*, the preferred concept, shown in **Exhibit V-116**, is a pinched loop APM system. This concept is a refinement of several alternatives aimed at reducing overall costs and maintaining ultimate APM system flexibility. As proposed, the preferred alternative would begin operation when the mid-field concourse is opened. It will have a single station serving the existing Terminal Core between Terminals 1 and 2, will connect with the mid-field concourse with a single station located near the center of the concourse, and will extend to the west to its terminus at the system's Operations/Maintenance and Storage facility at the West Terminal Complex. A third station would be constructed in conjunction with the development of the West Terminal at a later date. As shown in Exhibit V-116, the system also is designed in a manner that would allow for a future extension in an easterly manner with station connections at Terminals 3 and 5 and the WGP's Terminals 4 and 6.

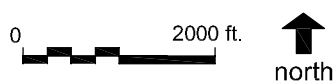
Due to the fact that the future tenant(s) of the West Terminal Complex are not yet known and, therefore, the type of airline activity that would exist there is undefined (hubbing vs. non-hubbing operations, code share partners with airlines operating at other terminals, etc.) it is impossible to estimate the number of transfers, and thus the peak demand, that would be placed on the system.

¹¹ Lea+Elliot, Inc., *O'Hare Modernization Program Secure and Non-Secure Automated People Mover Alternatives*, January 2003.

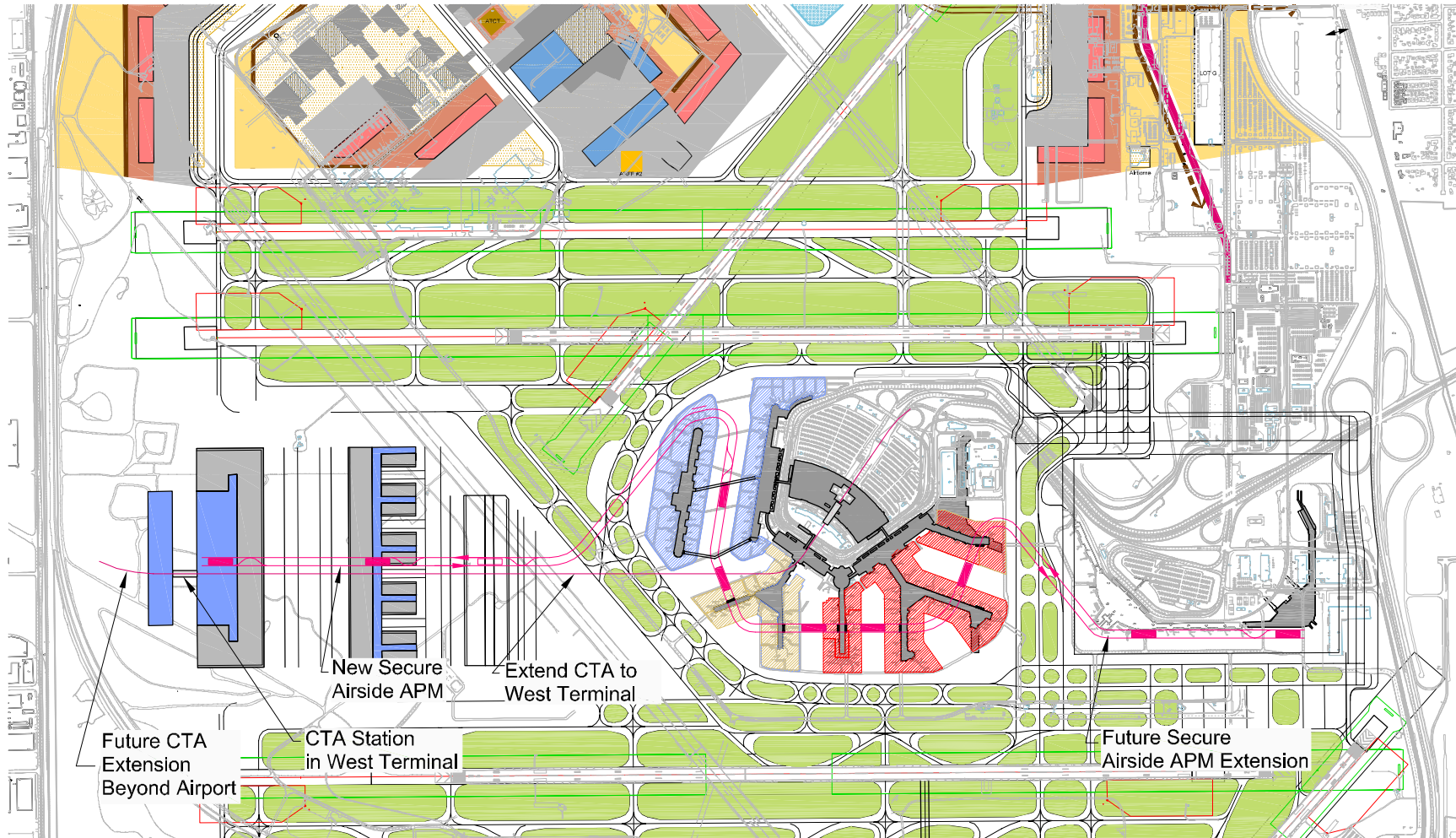


Source: Lea + Elliot, Inc.
Prepared by: Lea + Elliot, Inc.

Exhibit V-114

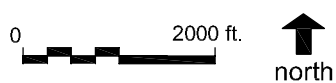


Secure APM System Concept 1

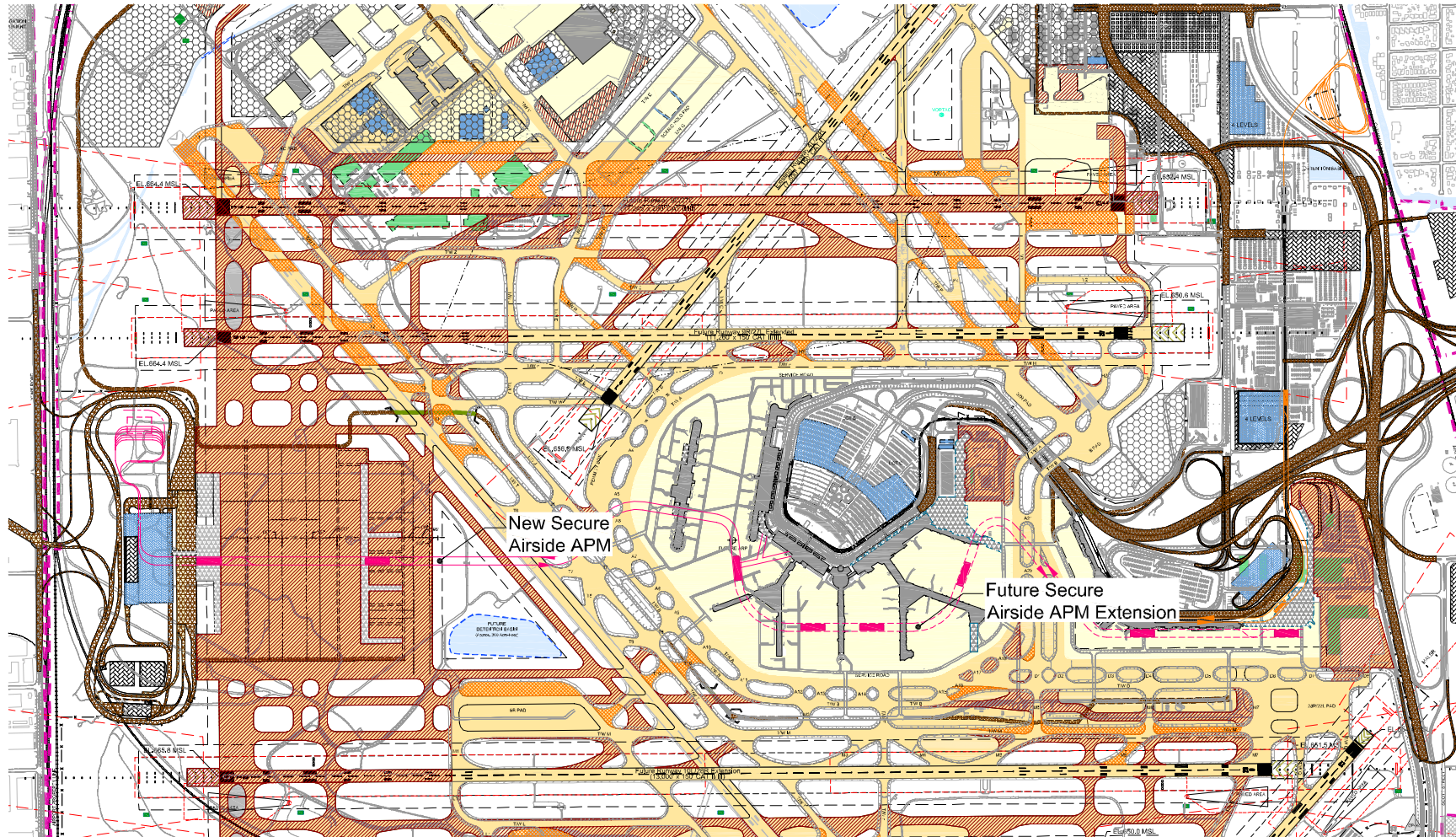


Source: Lea + Elliot, Inc.
Prepared by: Lea + Elliot, Inc.

Exhibit V-115

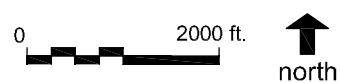


Secure APM System Concept 2



Source: Lea + Elliott, Inc.; Martinez Corp. Aerial Photography (Nov. 2001);
Department of Aviation Airport Management and Records
Prepared by: Lea + Elliott, Inc.

Exhibit V-116



Secure APM System Preferred Concept

Therefore, this master planning effort focused on defining a corridor for the APM and did not include an analysis of passenger demand or identification of specific system technical capabilities (e.g., car capacity, passenger wait times, etc.). It is expected that the technical capabilities of an APM system will be designed to serve anticipated passenger demand. However, for comparative purposes, it was assumed that the APM system that is ultimately developed will experience high levels of demand, which is reflected in the concept alignments.

5.5.2 Non-Secure East/West Passenger Movements

Three methods for providing non-secure movements between the east and west sides of the Airport were considered. Allowances for these movements were only considered necessary under the full-build condition when the West Terminal Complex is fully operational and western landside access is provided from York Road and Thorndale Avenue. The need for a non-secure east/west Airport connection is to facilitate the transportation of passengers and other Airport users that need to transfer between non-secure Airport areas (e.g., passengers who return from a trip and must claim bags at the Core Terminal Complex but parked their car on the other side of the Airport, outbound passengers who arrive at one side of the Airport but their airline operates on the other side, and those who arrive at the Airport on the wrong side to greet incoming passengers). The alternatives reviewed for providing this non-secure cross-airport movement capability include:

- Extension of the existing non-secure ATS to the West Terminal Complex,
- Provision of a non-secure roadway across the airfield and a shuttle bus system; and
- Provision of a shuttle bus system that operates on the future roadway system on and around the Airport.

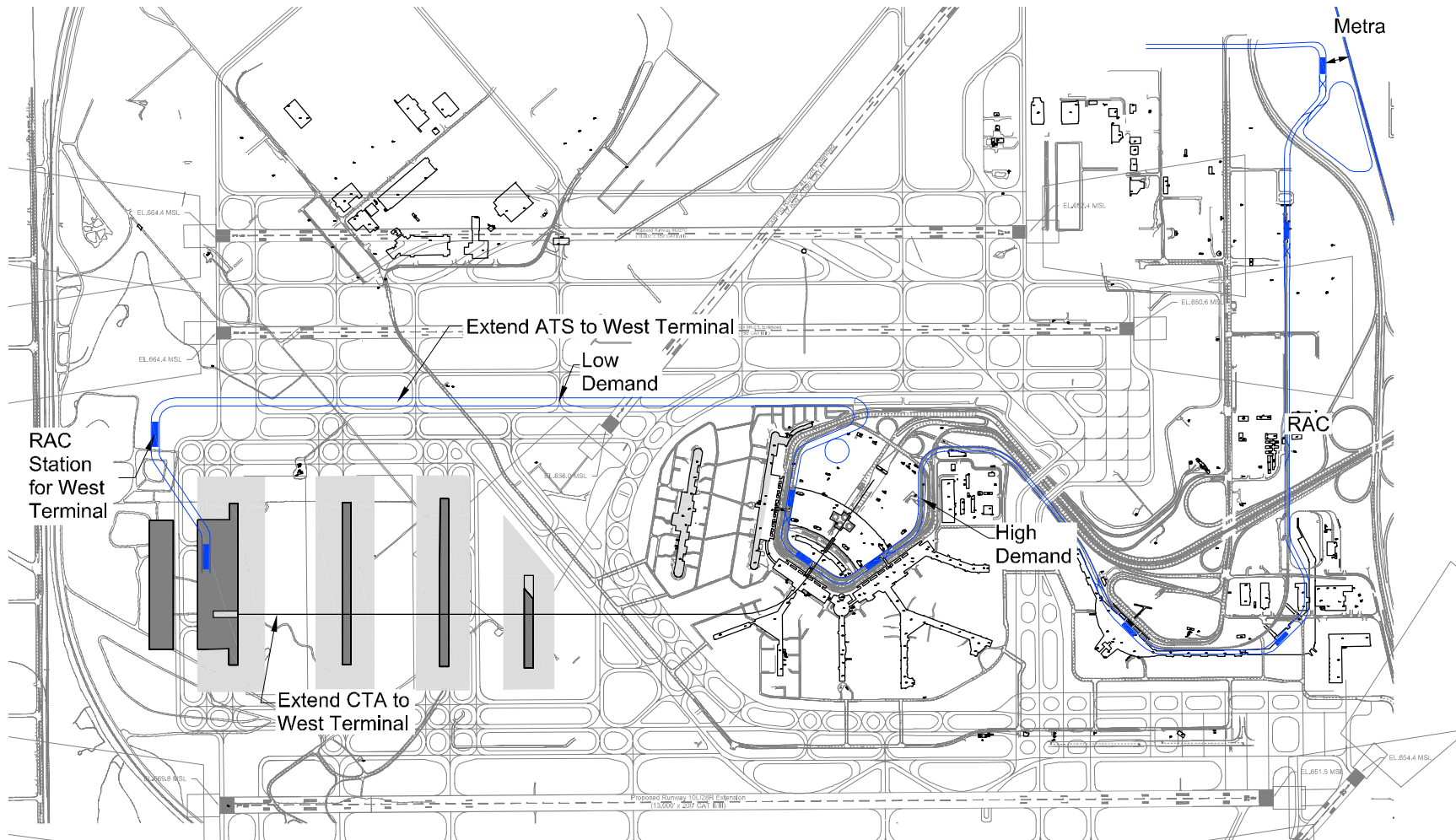
5.5.2.1 ATS Improvements Concept

A minor modification to the planned ATS extension in the Northeast Quadrant of the Airport, as depicted on the previously approved May 2002 Future ALP, may be required in order to avoid conflicts with the 14 CFR part 77 surfaces of future Runway 9C-27C. The area in question is the point where the extension of the system guideway crosses the elevated flyover ramp between Bessie Coleman Drive and Mannheim Road. The extension of the guideway in this area is necessitated by a new Operations and Maintenance facility to replace the existing facility due the construction of Terminal 6 in the WGP. It is believed that the alignment extension may need to be shifted slightly to the west in order to cross the flyover ramp at a point where the roadway transitions back to grade, thereby lowering the height of the guideway in the RPZ.

Consideration was given to extending the existing ATS system from its existing terminus at Terminal 1 to the future West Terminal Complex to provide a non-secure connection between the east and west sides of the Airport terminal facilities.

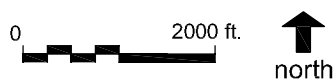
The following basic non-secure ATS westerly extension alternatives for this non-secure passenger movement concept were considered:

- *Alternative 1*, shown in **Exhibit V-117**, involves extending the existing ATS from its current terminus near the station at Terminal 1 in a northeasterly direction, crossing the main Airport inbound roadway, turning west and transitioning below grade to run in a tunnel section parallel to Runway 9R-27L to a point immediately north of the proposed garage for the West Terminal Complex, and then connecting with the West Terminal landside facility. This



Source: Lea + Elliot, Inc.
Prepared by: Lea + Elliot, Inc.

Exhibit V-117



Non-Secure ATS Concept Alternative 1

extension meets the general objectives of connecting the Terminal Core/East Terminal Areas to the West Terminal Complex, but would likely require the reconstruction of some facilities in order to accommodate the transition to a below grade system on the north side of the Terminal 1 B Concourse.

- *Alternative 2*, shown in **Exhibit V-118**, relies on a helix design as the system is extended from the current terminus at Terminal 1 to a below-grade alignment that would turn northeast, then south, and finally west in the area roughly beneath the O'Hare Hilton Hotel. From this point, the system would run below grade to the West Terminal Complex. Note that since this is a non-secure system, no stations would be provided at the mid-field concourses. This alternative would have to be designed and constructed in a manner that avoids below-grade conflicts with the preferred secure APM alternative, the Ring Tunnel, and the future extension of the CTA Blue Line (as discussed in Section 5.4.8).
- *Alternative 3*, shown in **Exhibit V-119**, is a more expansive variation of Alternative 2. In this concept, the system becomes a bi-directional loop system rather than a pinched-loop system, and ATS trains would be able to take more direct paths from the West Terminal Complex to the Airport's east side ground access facilities, including the location of the future consolidated rental car facility and remote parking lots. In this alternative, the airfield must be crossed twice, once below-grade between the Terminal Core Area and the West Terminal Complex, and again between Runways 9L-27R and 9C-27C. The cross-airfield alignment between Runways 9L-27R and 9C-27C would be possible in a combination of tunnel sections (under taxiways), open cut sections, and a limited amount of at-grade guideway. This alternative requires the reconfiguration of some elements of the Northwest Maintenance Area.
- *Alternative 4*, shown in **Exhibit V-120**, is a hybrid of the non-secure extension considered in Alternatives 1 and 2. In this concept, the existing ATS would be extended to the west using a tight-radius helix immediately north of the Terminal 1 station, pass under the Main Airport Roadway at the extreme northern end of Terminal 1 in a westerly alignment, turn south at the northern end of Concourse C, and then turn west, paralleling the alignment of the secure APM preferred alternative to a terminus at the West Terminal Complex. This alternative has several advantages over the other alternatives, which include simpler construction since the ATS extension would not be routed under existing terminal buildings, concourses, and the CTA Blue Line tunnel/station, as well as potentially sharing some common infrastructure with the preferred secure APM system alternative (i.e., tunnels for the secure and non-secure systems would be located side-by-side at certain points along the alignment, thereby potentially reducing the need for redundant emergency exit systems, etc.).

Alternative 4 is considered the preferred alternative for the non-secure ATS extension concept. However, as discussed later in Section 5.5.2.3, the non-secure ATS extension concept itself is not the preferred concept to provide on-Airport passenger movements between the east and west sides of the Airport. Thus, the non-secure ATS alternatives presented above are intended to demonstrate a range of possible alternatives if extension of the ATS were to be considered again in the future.

5.5.2.2 Cross-Airfield Roadway Concept

A number of cross-airfield roadway alternatives were developed to connect the west and east terminal areas. The cross-airfield roadway concept provides a four-lane public access route across the airfield in the east-west direction. The primary emphasis of this concept was to provide a direct